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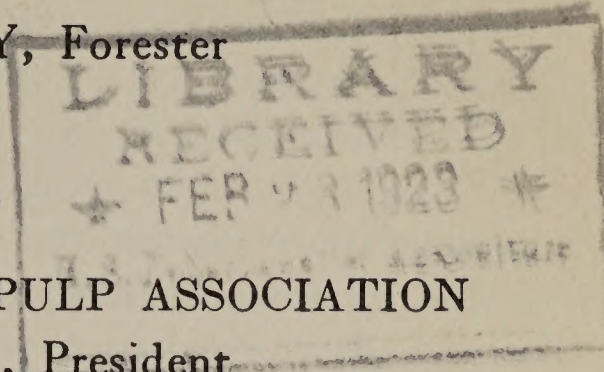
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UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

WILLIAM B. GREELEY, Forester

In cooperation with

THE AMERICAN PAPER AND PULP ASSOCIATION

WALTER J. RAYBOLD, President



PULPWOOD CONSUMPTION
AND
WOOD PULP PRODUCTION
1920

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PREFACE

This bulletin contains detailed statistics on pulpwood consumption and wood pulp production in the United States during 1920. The effort has been made to render it a convenient and useful reference manual within its range. For that reason the only units of quantity used are the cord of 128 cubic feet, and the ton of 2,000 pounds (air-dry). The period of years in all tables has been kept as extensive as possible considering space, and all tables are now presented by calendar years. The statistics of 1920 have been separated to show conditions in several States which heretofore were grouped to prevent the revelation of individual operations.

In the curves forming the frontispiece are shown graphically some of the most important quantitative relations of the industry for the United States and Canada. Comprehensive Canadian tabulations have been introduced as an appendix, to supplement those of the industry in the United States.

The map showing the geographical distribution of mills is of interest as an exhibit of the density of location in certain regions, which, in the main, are the eastern forest regions capable of producing spruce.

The canvass of the industry which provided the statistics for 1920 was conducted by mail by the Forest Service. The completeness and heartiness of the support afforded by pulp manufacturers is evidenced by the fact that estimates had to be made for only one firm in the entire United States. Over 90 per cent of the reports were received within six weeks after the first request. A few of the remaining reports were badly delayed.

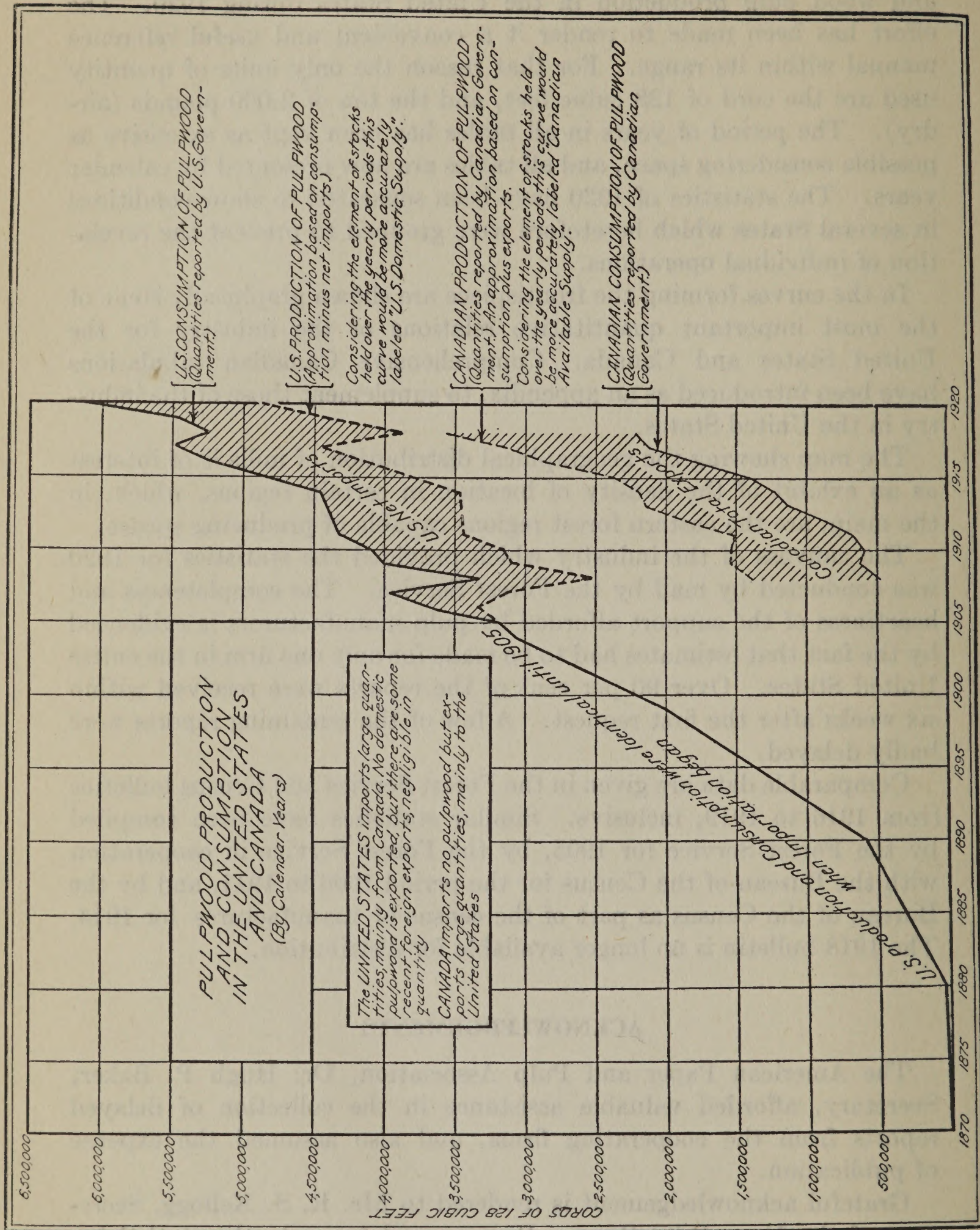
Comparable data are given in the Forest Service and Census bulletins from 1916 to 1919, inclusive. Similar statistics have been compiled by the Forest Service for 1905, by the Forest Service in cooperation with the Bureau of the Census for the period 1906 to 1911, and by the Bureau of the Census as part of the census of manufactures for 1914. The 1918 bulletin is no longer available for distribution.

ACKNOWLEDGEMENTS

The American Paper and Pulp Association, Dr. Hugh P. Baker, Secretary, afforded valuable assistance in the collection of delayed reports from the cooperating firms, and also assumed the expense of publication.

Grateful acknowledgement is rendered to Mr. R. S. Kellogg, Secretary of the News-Print Service Bureau, and formerly the statistician of the Forest Service, for a critical review of this report.

Forest Examiner C. W. Boyce furnished much valuable information, and also assisted materially in the preparation of the text.



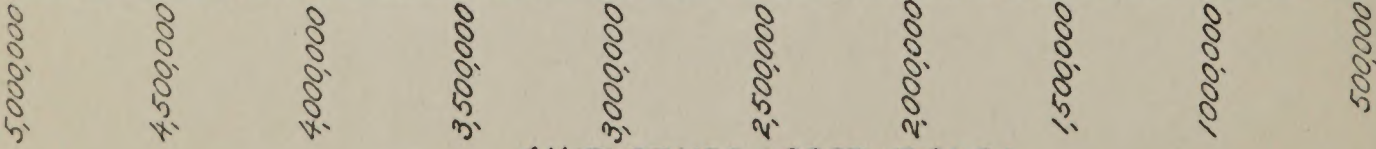
NATIONAL SUPPLY OF PULPWOOD UNKNOWN

Do you know how much pulpwood is left in the United States? Neither does anyone else. No one knows how soon these curves are going over their peak. In this respect the pulp industry is in the embarrassing position of a merchant who does not know his total assets.

In 1920 the pulp and paper trade of the United States paid out \$191,077,976 for the pulpwood, wood pulp and paper imported, in addition to the supply drawn from our forests. Less than two per cent of this sum would pay for an adequate survey of the Nation's forest resources.

TONS OF 2000 POUNDS (DRY)

5881



U.S. PRODUCTION OF WOOD PULP
(Quantities reported by U.S. Government.)

CANADIAN PRODUCTION OF WOODPULP
(Quantities reported by Canadian Government.)

CANADIAN CONSUMPTION OF WOODPULP
(Approximation based on reported production, minus exports, plus imports.)

Considering the element of stocks held over the yearly periods, this curve would be more accurately labeled "Canadian Available Supply"

COST OF DEPENDENCE ON FOREIGN FORESTS

Since 1905 the United States has become increasingly dependent upon foreign forests for a large part of the wood pulp consumed, notwithstanding an increased use of domestic wood. In 1920 the pulpwood and wood pulp imported constituted 35 per cent of the national pulp consumption. In addition, we imported 730,000 tons of newsprint, valued, with the other paper imports of relatively small amount, at \$85,000,000. The cut-over forest lands of the eastern United States, under proper management, could be made to produce the needed wood. Delay in this project will pile up the eventual cost. Why not begin now?

PULPWOOD CONSUMPTION AND WOOD PULP PRODUCTION IN 1920

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THE AMERICAN WOOD PULP INDUSTRY PRESENT CONDITIONS AND FUTURE NEEDS

The calendar year 1920 was marked by great activity in the wood pulp industry. The abnormal demand for pulp which developed in 1919, resulting from the world shortage following the war, continued until the latter part of October. The price of pulp continued to rise, even faster than previously during the war. As a consequence the production of pulp exceeded that of any previous year by 312 thousand tons.

The demand for pulp resulted in a correspondingly great demand for pulpwood. The industry entered 1920 with depleted stocks of pulpwood, due to the difficulty of securing labor in the woods during the war. The reserve stocks were soon exhausted. Purchasing agents scoured the country for wood, competing for the available supply with a keenness which ran the prices up and created a supply-starved market. Importations of pulpwood from Canada increased. New records of long distance shipments were established, and freight charges became an important item in the rising production costs. Notwithstanding the high prices, however, and the difficulty in securing sufficient quantities, the 1920 consumption of pulpwood exceeded the previous record by more than half a million cords, and set a mark which may not be again reached for several years.

According to their own reports the pulp manufacturers of the United States spent \$116,495,720 for the pulpwood consumed in 1920, exceeding the amount spent in 1919 by 29 million dollars and that of 1918 by 43 million dollars. Of the 1920 expenditures at least 28 million dollars were spent for Canadian pulpwood imported by the United States mills, an increase of 14 million dollars over the cost of Canadian wood in 1918. Counting the additional expenditures of 89 million dollars for imported pulp and 85 million dollars for imported paper, the United States depended upon Canada and other countries for its paper supply to the extent of over 200 million dollars.

Our dependence upon foreign forests is increasing yearly, as shown graphically by the wood pulp curve in the frontispiece, which plainly illustrates the widening interval between domestic consumption and domestic supply. Although the imports of wood pulp have been increasing irregularly since 1909, those of 1920 exceeded the highest previous record by almost one third. Moreover, an enormous increase occurred in the importations of paper of all grades, especially newsprint. From 1911 to 1916 the increase was regular. In 1916, however, a notable rise in the rate of increase began, and the value of the importations since then has risen from 28 million dollars to over 84 million dollars in 1920.

Fifty years ago we used practically no wood pulp. In 1920 the per capita consumption of paper and other wood pulp products was ap-

proximately 150 pounds. The uses of wood pulp are multiplying and the consumption curve slants steeply upward. Yet at this time we are compelled to import over a third of the pulp we consume, besides half a million tons of paper, to supply our domestic needs.

The accompanying map shows the extreme concentration of the mills in New England, New York, and the Lake States, once the regions of abundant spruce. Only one mill appears in Alaska, where it is estimated there is enough hemlock and spruce to supply half of our present newsprint requirements in perpetuity. There is also much pulpwood in the Pacific States. Geographically, the industry has remained stationary in the Northeast, while the lumber industry moved successively to the Lake States, the South, and the West. Thirty per cent of the newsprint manufacturing industry is in New England, nearly 50 per cent more in New York, and 15 per cent in the Lake States. In these regions the annual cut exceeds by two or three times the growth of the forest. As the result of unregulated lumbering, followed by fire, over 60 million acres of potential forest lands, the most accessible of all the world to these mills, are now producing nothing or supporting a growth of little use except for firewood. If they were producing only a third of a cord of pulpwood per year per acre, the total yield would be 20 million cords, or approximately twice the amount needed to supply our entire present consumption.

We can not count upon reducing the amount of pulp used. That would be not only undesirable but probably impossible as well. We cannot count upon Canada indefinitely as a source of supply, for the Canadian forests are no more limitless than our own have proved to be.

The great eastern pulp mills cannot be moved to the timber of Alaska or the West Coast.

The trouble is, in brief, that we have mills without forests in the East and forests without mills in the West. The obvious solution will be to supply the deficiencies in both parts of the country. More mills will no doubt be located eventually on the Pacific slope and in Alaska. But what of the East, with its heavy investments of capital and its millions of waste acres?

Reforestation will take not only skill, energy, and money, but most serious of all, many years must elapse before the East can be put on a thoroughly self-supporting basis. Yet there is no choice left to us. The work must be undertaken. We must have pulp, and for every year of delay we must pay increasingly heavy penalties for neglecting to restore the forests as fast as the wood is consumed.

The difficulties should not be minimized, but they can and must be surmounted unless the United States is to become much more heavily dependent upon foreign nations for its pulp and paper supply.

DISCUSSION OF UNITED STATES TABLES

PULPWOOD CONSUMPTION

Table 1. Consumption of Wood by Kinds

The consumption of pulpwood by 253 establishments in 1920 was 6,114,072* cords, an increase of 12 per cent in comparison with 1919. and 16 per cent in comparison with 1918.

With the exception of domestic poplar each kind of pulpwood shows use in 1920 exceeding the previous record figures. Spruce shows an increase of 12 per cent over the previous high mark of 1916. The increased use of imported spruce is notable in the last two years. Imported poplar was also used in greater quantities. The increased use of beech, birch and maple, which exceeds the record of 1917 by 14,442 cords, or 13 per cent, shows a tendency toward the utilization of species other than those commonly used, due to the depletion of the latter, to the development of the soda and the sulphate processes, and to the demand for pulp. The increase in use of yellow pine species** is encouraging, indicating a tendency toward decentralization of the industry and the tapping of new supplies of raw material.

The use of slabs and other mill waste, which might have been expected to increase under the pressure of 1920 market conditions, is less in quantity than in any previous year tabulated except 1918. The use of chestnut decreased to such an extent that it is now tabulated with "all other woods."

Table 2. Annual Pulpwood Consumption and Cost

Consumption figures of pulpwood, together with the total annual cost and the average cost per cord are shown in Table 2 for those years beginning with 1899 for which statistics are available. This table tells the story of the uninterrupted growth of the industry, which is now approaching the billion dollar class in capitalization. During earlier years, when the use of wood for pulp was comparatively small and competition less active, the average price per cord was low. Comparatively low prices prevailed until 1917, when the lack of ample reserves of pulpwood within easy reach was immediately reflected in a sharp rise in price as the strain of war conditions was applied. Since

*Includes an estimated consumption of 242,000 cords by one establishment.

**In 1918 and previously *Pinus virginiana* and probably also *Pinus rigida*, commonly reported as "jack pine" in Pennsylvania, Maryland, and Virginia, were tabulated with the true jack pine (*Pinus banksiana*) of the Lake States region. In 1919 and 1920 these scrubby pines were included with yellow pine.

1916 the price of pulpwood has been increasing rapidly, culminating with \$19.03 per cord in 1920, an increase of 117 per cent. In the same five year period the quantity of pulpwood consumed increased 16.9 per cent.

Table 3. Consumption of Wood by Kinds and States

Figures for certain States are not printed in other than group form because the operation of individual firms would thereby be revealed. This year it has been possible, however, to extend the list of States to include North Carolina, Washington, Massachusetts, and Ohio separately, thereby showing the operations of 14 States instead of 10 as formerly. Ten States and the District of Columbia can not be shown individually for the reason stated. Alaska does not appear because the mill at Speel River did not produce its first pulp until January, 1921.

Although the proportion of imported spruce used in Maine has fallen off in the past two years, its use in New York, Pennsylvania, and Michigan has greatly increased. The imported spruce used in New York State now definitely exceeds the amount of domestic spruce used in the ratio of 5 to 4. The State which ranks second in consumption of pulpwood, and which shows the greatest concentration of pulp mills is now forced to depend upon importation for over half of its supply of raw material, although millions of acres of cut-over forest land lie within its borders.

The increases are well distributed by States. Every State but one shows greater consumption than in 1918 and 1919. The greatest numerical increase is shown in the State of Maine, and the greatest proportionate increase in relation to 1918 is in Minnesota, where the consumption of pulpwood has increased 40 per cent in the past two years. West Virginia is the only State which shows a decrease since 1918. This may have resulted from the termination of war conditions.

Table 4. Consumption of Wood by Kinds and Processes

The following tabulation shows the percentage of the total consumption (6,114,072 cords) reduced by each process:

Process	Per Cent
Sulphite.....	52.4
Mechanical.....	26.0
Soda.....	15.1
Sulphate	6.5

The conifers or softwoods enter largely into the production of mechanical and sulphite pulps, while the bulk of the hardwood used is reduced by the soda process. The sulphate process works mainly on conifers reducing them for special purposes.

The average number of cords of wood required to produce a ton of pulp, by each of the four processes and by all combined, is shown in the following tabulation, for the United States and Canada. The United States figures are the average for five years from 1916 to 1920. The Canadian figures are the average for 1917 and 1918.

Nation	All Processes	Mechanical	Sulphite	Soda	Sulphate
	Cords	Cords	Cords	Cords	Cords
United States.....	1.58	1.00	2.02	2.06	2.13
Canada.....	1.43	1.02	2.19	2.21	1.64

Table 5. Consumption of Wood by States and Processes

Table 5 is introduced for the first time to show the quantity of pulpwood consumed by the different processes, tabulated by States.

New York leads in groundwood, Maine in the sulphite process, Pennsylvania in the soda process, and Wisconsin in sulphate pulp. Comparison with previous years reveals a steady increase in amount of wood reduced by the soda and sulphate processes, which are relatively in their infancy, but are utilizing increasing quantities of species less adapted to the more exacting requirements of the mechanical and sulphite processes. To this fact in part may be attributed the increasing use of minor species as mentioned in the discussion of Table 1. Furthermore, the increase in activity of the soda and sulphate processes in the South indicates possibilities in a new region where there is at present an abundance of pulpwood. Silvicultural conditions in the South are admirably adapted to the growing of pulpwood on a sustained yield basis.

Table 6. Consumption and Cost of Wood by Condition and States

Of the aggregate quantity of wood consumed 47 per cent arrived at the mills in the rough, 47 per cent peeled and 6 per cent rossed. These per cents vary slightly from those of 1918, the main increase in quantity being in peeled wood. The corresponding quantities are given in Table 6 by States.

The average cost per cord reported for rough wood was \$16.01. The added preparation given the wood adds to its cost, so that for peeled wood the average was \$21.04 and for rossed wood \$27.73. Comparison with 1918 figures shows that the increase in the cost of wood in each condition is between 36 and 39 per cent.

Table 7. Consumption and Cost of Wood by Condition and Kinds

Comparing the cost of domestic and imported spruce at the mill, the greater price was paid for the latter. This, in part, is responsible for the fact that New York, which imported 59 per cent of the spruce consumed by her mills, paid \$2.83 more per average cord than any other State. A similar condition is seen in Maine, New Hampshire and Pennsylvania, in each of which the cost of wood is above the average. The effect is blanketed in Wisconsin by the large amount of hemlock and balsam used. In Minnesota, where domestic spruce formed 95 per cent of the consumption, pulpwood cost \$10.40 per cord less than in New York. If New York pulp mills could have bought their spruce from native forests at a saving of \$10 per cord the saving on their imports alone would have been more than \$5,000,000.

Table 8. Wood Consumed and Wood Pulp Produced, with Costs by States, Five Years Compared

Beginning with the moderate average of \$8.76 in 1916, the cost of pulpwood has progressed steadily through the past five years until it reached the unprecedented figure of \$19.03 in 1920. The greatest increase in any one year took place in 1920, amounting to \$3.08 per cord, or 19 per cent. In 1919 and 1920 the cost of all forest products increased to a phenomenal extent. Emphasis is laid upon the fact that the average cost per cord is computed from the figures reported by mills operating under conditions both general and peculiar to themselves, and which preclude their costs being directly comparable. This fact should be considered in using the average cost per cord in any computation or deduction. The Forest Service assumes responsibility for the tabulations presented in this report but cannot guarantee the correctness of the individual mill reports upon which the tables are based.

In the discussion of Table 7 it was remarked that the States which import the greatest quantities of pulpwood are forced to pay the highest prices. The heaviest importers are those States where the concentration of mills is dense and the native supplies of pulpwood are most depleted. New York, New Hampshire, Vermont, and Massachusetts, which depend on importations from Canada for a large proportion of the spruce pulpwood used, pay the greatest prices. Maine, where the pulp industry is centralized and the competition for wood is great, pays the next highest price. Pennsylvania is in the next lower rank only because of the greater proportionate development of the soda and sulphate processes, which make the use of the minor and less expensive species possible. The Wisconsin price is low because the industry there depends on Minnesota spruce and other species, such as hemlock

and tamarack, obtained in large quantities within the State. Washington, with ample local supplies of wood, pays the lowest price under normal conditions.

A similar conclusion is reached if Table 8 is analyzed by another method. Dividing the value of the pulpwood consumed by the number of tons of pulp produced it is seen that each ton produced in New York requires the expenditure of \$34 for wood, while in Washington the cost of wood is \$16.41 per ton of pulp. It is true that New York uses much more spruce in proportion to its production than Washington. But in Minnesota, which uses a larger percentage of spruce than any other State, the cost of wood per ton of pulp is \$12 less than in New York. New York imports more spruce than it produces, while Minnesota imports none.

WOOD PULP PRODUCTION

Table 9. Quantity and Average Value per Ton, by Processes and States

Table 9 gives figures on wood pulp production in as much detail as is practicable without revealing the operations of individual mills. The reported aggregate output was 3,821,704* tons, exceeding that of 1919 by 8.6 per cent. The following tabulation shows the per cent of the total production derived from each process:

Process	Pulp Production in 1920. Tons	Per Cent of Total Production
Sulphite.....	1,585,834	41.5
Mechanical.....	1,583,914	41.5
Soda.....	463,305	12.1
Sulphate.....	188,651	4.9

The average value f. o. b. mill for all pulp produced in 1920 is \$72.20 per ton, an increase of \$19.52 per ton or 37 per cent above 1918. The average value of mechanical pulp as given is 50.6 per cent greater than that reported in 1918. On a similar basis of comparison the value of sulphite pulp has increased 32.5 per cent, soda pulp 42.7 per cent, and sulphate pulp 19.7 per cent. No valuation figures for pulp are available for 1919.

The value of unsteamed mechanical pulp is lowest in Oregon and California, Maine, Minnesota, and Washington. It is highest in Michigan, Wisconsin, Pennsylvania, and New York. With the exception of Maine this relationship follows closely the price of pulpwood. The prices for unbleached sulphite pulp show a remarkable difference between the eastern regions of centralization and the Pacific Coast, where the reported value at the mill is much lower.

The five great pulp producing States continue to be, as in 1918, Maine, New York, Wisconsin, New Hampshire, and Pennsylvania, in

*Includes an estimated production of 134,000 tons by one establishment.

the order named. In 1920 these five States produced 73 per cent (2,800,000 tons) of the wood pulp manufactured in the United States. In 1918 they produced 76 per cent.

Table 10. Pulp Production Since 1899, by Processes

Table 10 exhibits the production of wood pulp for all years since 1899 for which statistics are available, showing the progressive growth of the industry by processes. Pulp manufacture increased 112 per cent in the ten year period 1899 to 1909 and 41 per cent in the ten year period 1909 to 1919. From 1899 to 1920 it increased 224 per cent.

The production by all processes is increasing, but proportionally the mechanical process shows least growth, while sulphate shows the greatest. The increase of the soda and sulphate processes is of interest in respect to conservation of domestic wood supplies, as these processes utilize some woods which are not used by the other processes, and others which are not ranked as first-class pulpwoods

IMPORTS AND EXPORTS OF PULPWOOD, WOOD PULP, AND PAPER

Tables 11 to 15, inclusive, are taken from statistics compiled by the Department of Commerce, and revised where necessary to show calendar years and short tons. They are important in connection with this report because of the close relation of the imports of pulpwood and the imports and exports of wood pulp and paper to the domestic supplies of the United States. Revised classifications effected during the period covered by the tables account for the omissions and regrouping.

The import figures show the increasing dependence of the United States upon other countries for paper and paper making materials. While the growth of the industry in the United States has been steady, it has not been sufficient to meet the myriad growing demands for wood pulp and paper.

The United States exports no pulpwood. Exports of wood pulp are insignificant in quantity relative to the imports. In 1920 the value of paper exports was not very different from the value of the imports, but the quantity of newsprint imported is nearly seven times as large as the greatest previous export record. In all other kinds of paper the exports exceed the imports.

Table 11. Imports of Pulpwood

The annual imports of pulpwood for the past eleven years are shown in Table 11. In 1920 the imports exceeded those of 1919 by 18.5 per cent, but were less than those of 1918 by 10 per cent.

The column of average values shows that the price of imported wood was between \$6 and \$7 from 1910 until 1916. In 1917 an upward trend began, culminating with the value of \$13.62 per cord in 1920. The average value per cord increased \$3.63 in 1920 as compared with 1919, which fact, taken in connection with the increased quantity imported, added nearly \$6,500,000 to the cost of pulpwood for the year. Practically all of the imported pulpwood comes from Canada. The average cost of imported pulpwood in 1920 is 108 per cent greater than in 1910 and 1916, the pre-war period. It should be remarked that the quantities stated by the Bureau of Foreign and Domestic Commerce in these tables do not correspond with the figures in preceding tables in this report showing the quantity of imported woods consumed, as reported by the mills. The Forest Service asked the mills for figures on imported spruce and poplar alone, and the quantity of other species which was imported was not reported for that reason. Much wood is carried over in storage from year to year, so that there is a possibility of additional discrepancies.

Table 12. Imports of Wood Pulp

The aggregate imports of wood pulp in 1920 reached a new high mark, being greater by 33 per cent than those of 1916, the previous record year. In 1919 there was also an increase as compared with 1918, showing steady revival of demand following the World War. The average value of imports per ton was \$98.66, an increase of \$40.41 or 69 per cent as compared with 1919, while the figures of 1919 show only a slight increase (7 per cent) over 1918. The average value per ton in 1920 is over three times as great as in the pre-war period.

Table 13. Exports of Wood Pulp

Owing probably to the domestic demand for newsprint, wood pulp exports were not as great in 1920 as in 1919, there being a decrease of 7,924 tons or 20 per cent. A new high mark for exports was set in 1919, the figure being a few tons greater than in 1916.

The average 1920 value per ton of all exports was \$91.80, representing an increase of \$15.70 or 21 per cent in excess of the year before. As regards total valuation the exports of 1917 are at the peak. The total valuation of exports in 1920 was less by \$519,736 or 15 per cent, than in 1917.

The exports of wood pulp are insignificant as compared with the imports. Although exports have been increasing irregularly, they have never amounted to more than 40 thousand tons. The increasing demands of the domestic market have precluded large exportations.

Table 14. Imports of Newsprint and Other Paper

The bulk of the paper importation of the United States is confined to newsprint, for which during 1919 and 1920 there was an increased demand. Other grades of paper are imported but not in quantities which are at all comparable. The United States consumed about 2,200,000 tons of newsprint in 1920. Combining the imports of newsprint with the imports of pulpwood and of wood pulp which are made into newspaper in the United States, this country is shown to have been dependent on foreign forests for fully two-thirds of its newsprint supply in 1920. Other kinds of paper show a much healthier economic condition, with imports and exports either equal or with exports in excess of imports.

Table 15. Exports of Newsprint and Other Paper

The exports of newsprint and all other printing paper fell off sharply in 1920, due to the great demand for these grades in the United States. However, the total value of paper exported exceeded that in all other years by 3 million dollars. The United States exports book papers to all parts of the world. Although book paper is also imported, the exports far exceed the imports. Large quantities of wrapping paper and boards are also exported. The exports of newsprint, although large in themselves, are normally only about one-seventh of the imports.

TABLE 1.—Pulpwood consumption: Quantity of wood consumed by kinds, with per cent of distribution, 1916, 1917, 1918, 1919 and 1920.

Kind of Wood	(1) 1920		(2) 1919		(1) 1918		(1) 1917		(1) 1916	
	Quantity	Per cent of distribution	Quantity	Per cent of distribution	Quantity	Per cent of distribution	Quantity	Per cent of distribution	Quantity	Per cent of distribution
Total.....	(Cords.) 6,114,072	100.0	(Cords.) 5,477,832	100.0	(Cords.) 5,250,794	100.0	(Cords.) 5,480,075	100.0	(Cords.) 5,228,558	100.0
Spruce:										
Domestic.....	2,565,787	42.0	2,313,419	42.2	2,204,143	42.0	2,385,966	43.5	2,399,993	45.9
Imported.....	921,811	15.1	873,795	15.9	666,164	12.7	681,450	12.4	701,667	13.4
Hemlock.....	885,485	14.5	795,154	14.5	836,406	15.9	775,003	14.1	760,226	14.6
Balsam Fir.....	328,882	5.4	288,814	5.3	368,117	7.0	382,036	7.0	301,032	5.8
Yellow Pine.....	323,434	5.3	234,463	4.3	133,774	2.5	142,094	2.6	90,310	1.7
Poplar:										
Domestic.....	189,946	3.1	180,160	3.3	210,849	4.0	313,955	5.7	329,370	6.3
Imported.....	177,748	2.9	158,220	2.9	78,354	1.5	92,298	1.7	82,326	1.6
Yellow Poplar.....	73,998	1.2	72,605	1.3	61,247	1.2	41,155	.7	37,974	.7
Tamarack.....	69,751	1.1	44,042	.8	52,031	1.0	58,732	1.1	33,271	.6
Gum.....	68,914	1.1	30,355	.6	47,145	.9	32,513	.6	37,391	.7
White Fir.....	41,862	.7	31,138	.6	35,119	.7	33,181	.6	49,425	1.0
Jack Pine.....	40,052	.6	51,581	.9	152,124	2.9	75,382	1.4	80,068	1.5
Cottonwood.....	25,790	.4	20,830	.4	18,685	.4	32,993	.6	22,211	.4
Basswood.....	10,469	.2	9,799	.2	12,110	.2	3,807	.1	11,481	.2
White Pine.....	2,202	(3)	7,566	.1	10,183	.2	3,562	.1	2,545	(3)
Beech, Birch and Maple (4).....	122,393	2.0	96,971	1.8	94,180	1.8	107,951	2.0	77,762	1.5
All Other Woods.....	95,319	1.6	93,839	1.7	115,560	2.2	84,015	1.5	10,662	.2
Slabs and Other Mill Waste.....	170,229	2.8	175,081	3.2	154,603	2.9	233,982	4.3	200,844	3.9

(1) Forest Service figures.
(2) Bureau of the Census figures.

(3) Less than one-tenth of one per cent.
(4) Mills keep no separate record of beech, birch and maple.

TABLE 2.—*Annual consumption of Pulpwood and total cost for specified years*

Year	Consumption (Cords)	Total Cost	Average Cost per Cord (f.o.b. mill)
1920.....	6,114,072	\$116,495,720	\$19.03
1919.....	5,477,832	87,386,083	15.95
1918.....	5,250,794	73,167,118	13.93
1917.....	5,480,075	60,815,057	11.10
1916.....	5,228,558	(1) 45,785,682	8.76
1914.....	4,047,763	39,408,453	8.81
1911.....	4,328,052	-----	-----
1910.....	4,094,306	-----	-----
1909.....	4,001,607	4,477,540	8.62
1908.....	3,346,953	28,047,473	8.38
1907.....	3,962,660	32,360,276	8.17
1906.....	3,661,176	26,411,887	7.21
1905.....	3,192,123	17,735,665	5.56
1899.....	1,986,310	9,837,516	4.95

(1) Not including cost of "slabs and other mill waste" in Louisiana, Massachusetts, North Carolina and Virginia.

TABLE 3.—Pulpwood consumption: Quantity of wood consumed, by kinds and States, 1920.

State	No. of estab-lish-ments	Total quantity (Cords)	Spruce		Hem- lock	Balsam fir	Yellow pine	Poplar		Yellow poplar	Tama- rack	Gum	White fir	Jack pine	Cotton- wood	Bass- wood	White pine	Beech, birch and maple	All other woods	Slabs and other mill waste
			Domestic	Imported																
United States..	253	6,114,072	2,565,787	921,811	885,455	328,882	323,434	189,946	177,748	73,998	69,751	68,914	41,862	40,052	25,790	10,469	2,202	122,393	95,319	170,229
Maine.....	35	1,389,495	1,019,601	93,581	4,769	61,585		138,570	54,280							1,594		13,677		1,838
New York.....	78	1,130,505	382,155	544,811	58,165	23,883		24,043	85,766							4,666	35			6,981
Wisconsin.....	45	964,781	280,457	27,594	472,115	100,151		1,102			43,031			33,858			199			6,274
Pennsylvania.....	14	490,784	21,123	122,306	3,947	10,000	105,757	16,244	36,404	4,036		28,743			1,272			85,429	515	55,008
New Hampshire..	11	403,530	209,653	75,000	2,806	93,688		191												22,192
Minnesota.....	6	254,193	243,471			200		285			10,237									
Michigan.....	12	243,622	69,498	42,620	63,190	34,375		1,333			16,384			6,142			1,758	171		8,161
Oregon&California	6	190,399	37,132		129,342								21,207		2,028					600
North Carolina...	3	166,582	10,219		31,558		23,769			4,330									85,020	11,686
Virginia.....	6	166,547	68,653	523	22,350		29,870			36,934										8,217
Washington.....	5	143,794	24,298	200	73,892								20,565		16,778				8,061	
Vermont.....	9	116,765	100,426	10,097	1,319	4,892		31												
West Virginia....	4	84,725	41,865		21,432		3,839			905							210			16,474
Massachusetts....	4	56,049	45,974	5,079	600			3,098	1,298											
Ohio	3	32,336	11,262			108		345		482	99	345		52	2,412	207		1,378	1,723	13,921
All other States ⁽¹⁾	11	279,955					160,199	4,704		27,311		39,826			3,300	4,002		21,738		18,875

(1) Includes Delaware, District of Columbia, Georgia, Louisiana, Maryland, Mississippi, South Carolina, Tennessee and Texas.

TABLE 4.—*Pulpwood consumption: Quantity of wood consumed, by kinds and processes of manufacture, 1920.*

Kind of Wood	Aggregate quantity	Reduced by—			
		Mechanical process	Sulphite process	Soda process	Sulphate process
Total.....	(Cords) 6,114,072	(Cords) 1,591,378	(Cords) 3,202,380	(Cords) 923,695	(Cords) 396,619
Spruce:					
Domestic.....	2,565,787	1,144,888	1,345,477	1,763	73,659
Imported.....	921,811	289,146	632,665	.....	.....
Hemlock.....	885,485	64,768	777,705	.....	43,012
Balsam fir.....	328,882	35,239	257,823	.....	35,820
Yellowpine.....	323,434	11,653	4,879	147,435	159,467
Poplar:					
Domestic.....	189,946	4,409	1,467	184,070	.....
Imported.....	177,748	903	21	176,824	.....
Yellow poplar.....	73,998	905	.....	71,813	1,280
Tamarack.....	69,751	5,596	14,450	.....	49,705
Gum.....	68,914	.....	.....	68,914	.....
White fir.....	41,862	17,514	24,348	.....	.....
Jack pine.....	40,052	12,662	.....	.....	27,390
Cottonwood.....	25,790	2,028	.....	23,762	.....
Basswood.....	10,469	.....	.....	10,469	.....
White pine.....	2,202	1,667	35	.....	500
Beech, birch and maple.....	122,393	.....	171	122,222	.....
All other woods.....	95,319	.....	.....	95,319	.....
Slabs and other mill waste.....	170,229	.....	143,339	21,104	5,786

TABLE 5.—*Pulpwood consumption: Quantity of wood consumed, by States and processes of manufacture, 1920.*

State	Aggregate quantity	Reduced by—			
		Mechanical process	Sulphite process	Soda process	Sulphate process
Total.....	(Cords) 6,114,072	(Cords) 1,591,378	(Cords) 3,202,380	(Cords) 923,695	(Cords) 396,619
Maine.....	1,389,495	444,316	690,835	209,579	44,765
New York.....	1,130,505	465,035	553,556	111,914	.....
Wisconsin.....	964,781	247,168	592,564	.....	125,049
Pennsylvania.....	490,784	3,239	210,104	277,441	.....
New Hampshire.....	403,530	46,392	357,138	.....	.....
Minnesota.....	254,193	125,612	118,344	.....	10,237
Michigan.....	243,632	20,803	188,684	.....	34,145
Oregon and California.....	190,399	93,200	97,199	.....	.....
North Carolina.....	166,582	720	53,463	88,070	24,329
Virginia.....	166,547	6,393	99,220	36,934	24,000
Washington.....	143,794	41,401	77,554	24,839	.....
Vermont.....	116,765	80,849	21,276	.....	14,640
West Virginia.....	84,725	5,461	79,264	.....	.....
Massachusetts.....	56,049	9,565	42,088	4,396	.....
Ohio.....	32,336	.....	17,010	14,011	1,315
All other states ⁽¹⁾	279,955	1,224	4,081	156,511	118,139

(1) Includes Delaware, District of Columbia, Georgia, Louisiana, Maryland, Mississippi, South Carolina, Tennessee and Texas.

TABLE 7.—Pulpwood consumption: Quantity, average cost per cord, and total cost of wood consumed, according to condition, by kinds of wood, 1920.

Kind of Wood	Total			Condition								
	Quantity (Cords.)	Average cost per cord (f. o. b. mill)	Total cost	Rough			Peeled			Rosed		
				Quantity (Cords.)	Average cost per cord (f.o.b. mill)	Total cost	Quantity (Cords.)	Average cost per cord (f. o. b. mill)	Total cost	Quantity (Cords.)	Average cost per cord (f. o. b. mill)	Total cost
Total.....	6,114,072	\$19.03	\$116,495,720	2,875,860	\$16.01	\$46,043,130	2,891,221	\$21.04	\$60,831,386	346,991	\$27.73	\$9,621,204
Spruce:												
Domestic.....	2,565,787	19.97	51,236,460	1,399,399	17.72	24,803,288	1,105,519	22.26	24,611,858	60,869	29.92	1,821,314
Imported.....	921,811	26.78	24,685,003	197,694	23.11	4,569,476	508,106	27.02	13,729,921	216,011	31.00	6,385,606
Hemlock.....	885,485	14.80	13,104,513	662,147	13.70	9,069,644	169,250	18.22	3,084,095	54,088	17.58	950,774
Balsam Fir.....	328,882	19.20	6,314,030	173,892	14.61	2,540,161	142,292	23.66	3,367,034	12,698	32.04	406,835
Yellow Pine.....	323,434	12.15	3,930,662	152,209	8.61	1,311,199	171,225	15.30	2,619,463	.....	.....	.....
Poplar:												
Domestic.....	189,946	17.74	3,370,438	5,503	12.76	70,216	184,443	17.89	3,300,222	.....	.....	.....
Imported.....	177,748	18.96	3,370,291	.....	.....	.....	177,615	18.95	3,366,092	133	31.57	4,199
Yellow Poplar.....	73,998	16.67	1,233,527	5,717	14.21	81,257	68,281	16.88	1,152,270	.....	.....	.....
Tamarack.....	69,751	12.75	889,501	69,751	12.75	889,501	.....	.....	.....	.....	.....	.....
Gum.....	68,914	20.39	1,405,020	345	9.92	3,422	68,569	20.44	1,401,598	.....	.....	.....
White Fir.....	41,862	12.66	529,896	34,118	13.59	463,617	7,744	8.56	66,279	.....	.....	.....
Jack Pine.....	40,052	11.03	441,649	40,052	11.03	441,649	.....	.....	.....	.....	.....	.....
Cottonwood.....	25,790	11.33	292,279	1,450	7.84	11,368	24,340	11.54	280,911	.....	.....	.....
Basswood.....	10,469	18.39	192,521	207	9.92	2,053	10,262	18.56	190,468	.....	.....	.....
White Pine.....	2,202	14.00	30,831	2,202	14.00	30,831	.....	.....	.....	.....	.....	.....
Beech, Birch and Maple.....	122,393	17.75	2,121,999	2,849	12.55	35,764	119,544	17.45	2,086,235	.....	.....	.....
All Other Woods.....	95,319	13.45	1,282,499	86,743	13.87	1,203,121	8,576	9.26	79,378	.....	.....	.....
Slabs and Other Mill Waste.....	170,229	12.13	2,064,601	41,582	12.42	516,563	125,455	11.92	1,495,562	3,192	16.44	52,476

COST PER CORD - DOLLARS

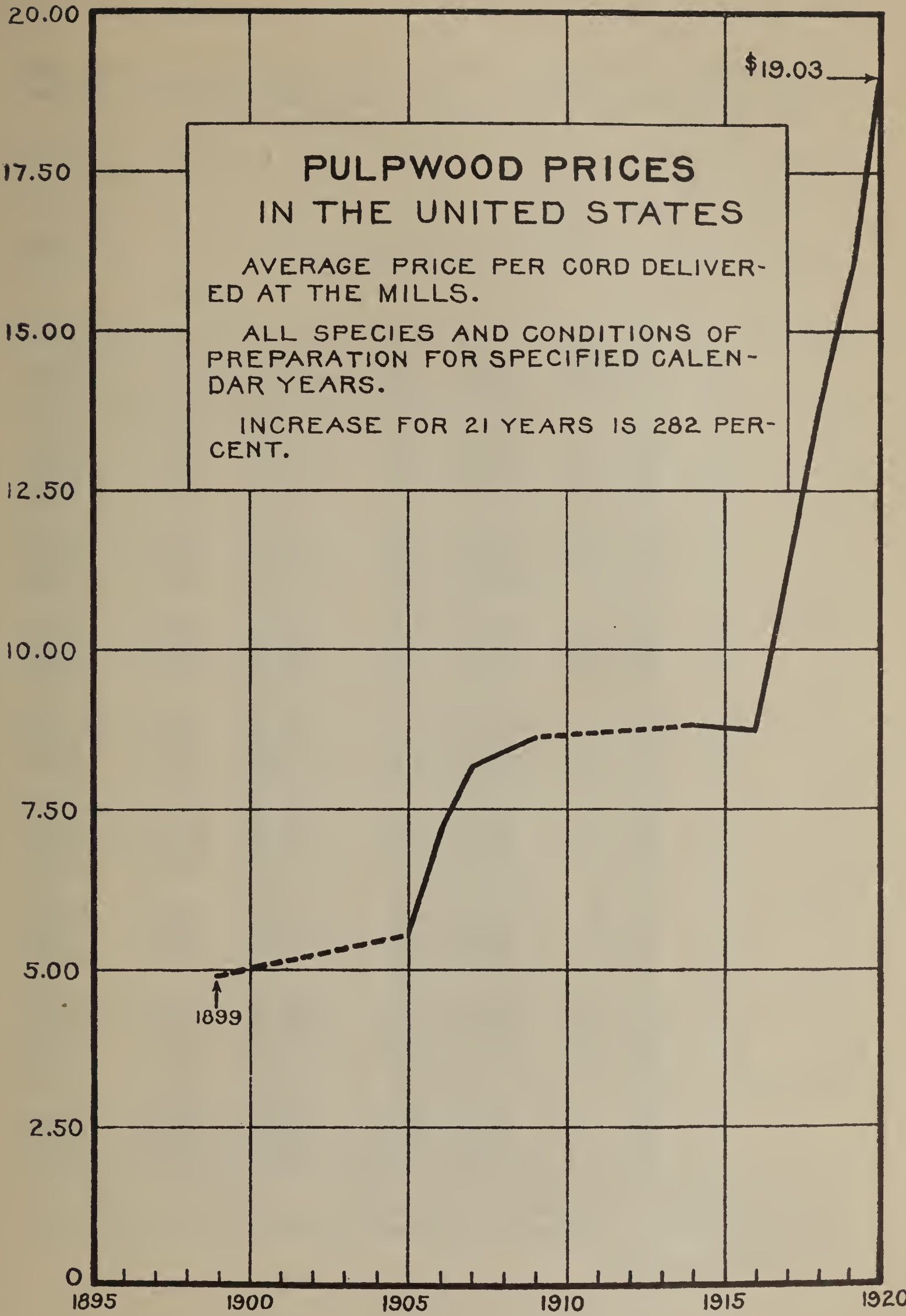


TABLE 8.—*Pulpwood consumption: Number of mills, quantity and cost of wood consumed, with average cost of wood per cord, and quantity and value of pulp produced by States, 1916, 1917, 1918, 1919 and 1920.*

	Year	No. of es- tab- lish- ments	Pulpwood consumed			Wood pulp produced	
			Quantity	Average cost per cord f.o.b mill	Total cost	Quantity	Total value f. o. b. mill
			Cords			Tons	
United States.....	1920	253	6,114,072	\$19.03	\$116,495,720	3,821,704	\$275,941,213
	1919	258	5,477,832	15.95	87,386,083	3,517,952	(¹)
	1918	250	5,250,794	13.93	73,167,118	3,313,861	174,570,645
	1917	246	5,480,075	11.10	60,815,057	3,509,939	150,902,280
	1916	235	5,228,558	8.76	(²) 45,785,682	3,435,001	(⁴)
Maine.....	1920	35	1,389,495	21.08	29,297,353	942,730	60,398,801
	1919	34	1,279,852	19.37	24,795,623	916,764	(¹)
	1918	33	1,234,969	15.57	19,226,644	872,779	40,386,320
	1917	33	1,309,239	11.31	14,813,387	898,798	30,568,116
	1916	32	1,198,753	9.09	10,891,247	852,276	27,182,639
New York.....	1920	78	1,130,505	25.01	28,272,896	830,045	55,600,015
	1919	84	1,055,145	19.43	20,498,405	811,958	(¹)
	1918	75	1,003,742	17.89	17,954,934	749,176	34,681,703
	1917	79	1,056,556	14.45	15,270,142	798,616	32,676,847
	1916	75	1,094,513	11.05	12,098,608	787,397	27,358,729
Wisconsin.....	1920	45	964,781	14.61	14,092,346	548,528	37,610,108
	1919	47	854,185	11.99	10,242,909	506,549	(¹)
	1918	46	860,857	9.93	8,551,564	473,890	22,049,498
	1917	43	805,490	8.79	7,083,173	456,129	19,276,815
	1916	43	743,595	7.70	5,729,044	451,651	18,230,252
Pennsylvania.....	1920	14	490,784	19.60	9,617,896	238,013	26,226,720
	1919	14	423,822	16.22	6,873,612	215,686	(¹)
	1918	14	383,699	15.48	5,941,382	195,451	13,831,788
	1917	14	415,776	11.23	4,669,165	215,060	13,541,009
	1916	13	423,843	8.74	3,706,081	216,964	(⁴)
New Hampshire...	1920	11	403,530	22.18	8,952,197	239,634	22,875,935
	1919	10	375,597	19.43	7,297,625	232,134	(¹)
	1918	11	345,272	18.10	6,248,764	229,774	19,164,368
	1917	11	416,553	13.78	5,738,883	266,645	15,647,319
	1916	11	471,041	9.81	4,623,146	341,365	12,156,363
Minnesota.....	1920	6	254,193	14.57	3,703,024	170,216	7,695,351
	1919	6	203,862	11.86	2,416,847	129,560	(¹)
	1918	6	182,002	11.79	2,145,170	121,444	4,618,125
	1917	6	205,026	11.31	2,319,833	140,353	4,085,334
	1916	5	205,433	7.34	1,507,233	138,799	6,086,694
Michigan.....	1920	12	243,632	16.62	4,047,994	132,776	12,036,165
	1919	12	207,234	12.48	2,586,808	106,194	(¹)
	1918	12	203,516	10.57	2,150,354	101,036	6,632,660
	1917	11	187,117	9.30	1,740,580	96,623	5,395,438
	1916	10	186,993	7.50	1,402,245	99,601	5,479,077
Oregon & California	1920	6	190,399	14.04	2,672,402	148,877	5,017,054
	1919	6	171,765	9.62	1,652,462	123,990	(¹)
	1918	6	131,587	8.90	1,171,073	100,036	2,955,444
	1917	5	162,709	6.03	981,357	120,237	2,862,821
	1916	5	170,386	5.81	989,262	123,878	2,408,235

(¹) No values available for pulp produced in 1919.

(²) Not including the cost of "slabs and other mill waste" in Louisiana, Massachusetts, North Carolina and Virginia.

(⁴) No correct data available.

TABLE 8 (Continued)—Pulpwood consumption: Number of mills, quantity and cost of wood consumed, with average cost of wood per cord, and quantity and value of pulp produced by States, 1916, 1917, 1918, 1919 and 1920.

	Year	No. of es- tab- lish- ments	Pulpwood consumed			Wood pulp produced	
			Quantity	Average cost per cord f.o.b mill	Total cost	Quantity	Total value f. o. b. mill
			Cords			Tons	
North Carolina	1920	3	166,582	15.26	2,542,403	64,773	7,993,497
	1919	3	158,763	9.06	1,438,821	61,161	(1)
	1918	3	186,168	8.07	1,502,762	54,169	3,921,554
	1917	3	175,433	8.05	1,412,940	64,548	3,629,262
	1916	3	85,709	5.16	(3) 266,207	35,348	1,624,255
Virginia	1920	6	166,547	17.45	2,905,706	86,320	9,603,094
	1919	4	126,153	15.05	1,898,975	61,929	(1)
	1918	7	129,637	12.43	1,611,874	69,895	5,781,240
	1917	7	141,579	10.31	1,459,061	75,972	6,028,584
	1916	6	132,736	8.46	(3) 1,036,116	68,595	3,100,473
Washington	1920	5	143,794	10.90	1,567,748	95,465	4,700,237
	1919	4	139,365	10.00	1,393,636	83,575	(1)
	1918	3	108,187	9.02	975,605	68,618	2,727,737
	1917	3	99,585	7.09	706,313	93,576	3,084,695
	1916	3	89,158	5.42	483,474	64,904	1,579,567
Vermont	1920	9	116,765	21.32	2,489,313	96,666	4,605,791
	1919	9	111,679	15.07	1,682,864	85,945	(1)
	1918	9	99,687	15.47	1,542,652	83,548	2,945,014
	1917	10	109,616	12.33	1,351,825	94,975	2,767,973
	1916	10	87,675	9.43	826,904	73,813	1,601,969
West Virginia	1920	4	84,725	10.88	922,027	35,821	2,933,727
	1919	5	83,590	11.62	971,376	39,195	(1)
	1918	5	109,885	11.22	1,233,252	48,261	3,659,394
	1917	5	119,918	8.61	1,032,045	54,813	3,591,815
	1916	5	127,478	6.42	818,983	58,913	2,358,934
Massachusetts	1920	4	56,049	22.14	1,240,758	34,687	3,304,249
	1919	4	51,981	19.33	1,004,840	32,611	(1)
	1918	4	45,754	17.53	792,263	30,674	2,394,112
	1917	4	55,897	12.58	703,369	30,802	1,489,076
	1916	3	27,640	9.91	(3) 271,978	19,247	651,046
Ohio	1920	3	32,336	17.23	557,169	12,549	1,286,929
	1919	3	26,967	9.17	247,157	10,449	(1)
	1918	3	18,060	7.00	126,355	7,818	581,456
	1917	2	28,716	7.27	208,701	11,589	599,607
	1916	3	30,820	6.18	190,596	14,911	580,228
All other States . . .	(5) 1920	12	279,955	12.91	3,614,488	144,604	14,053,540
	(5) 1919	13	207,872	11.47	2,384,123	100,252	(1)
	(5) 1918	13	207,772	9.59	1,992,470	107,292	8,240,223
	(5) 1917	10	190,865	6.94	1,324,283	91,203	5,657,569
	(6) 1916	8	152,785	6.18	(3) 944,558	87,339	3,407,333

(1) No values available for pulp produced in 1919.

(3) Not including cost of "slabs and other mill waste."

(5) Includes Delaware, District of Columbia, Georgia, Louisiana, Maryland, Mississippi, South Carolina, Tennessee and Texas.

(6) Includes Delaware, Georgia, Louisiana, Maryland, Mississippi, South Carolina and Texas.

TABLE 10—*Production of wood pulp for specified years, 1899-1920.*

Year	Total	Mechanical pulp	Sulphite pulp	Soda pulp	Sulphate pulp
	(Tons)	(Tons)	(Tons)	(Tons)	(Tons)
1920.....	3,821,704	1,583,914	1,585,834	463,305	188,651
1919 ⁽¹⁾	3,517,952	1,518,829	1 419,829	411,693	120,378
1918.....	3,313,861	1,364,504	1,456,633	350,362	142,362
1917.....	3,509,939	1,535,953	1,451,757	437,430	84,799
1916.....	3,435,001	1,508,139	1,466,402	387,021	73,439
1914 ⁽²⁾	2,893,150	1,293,661	1,151,327	347,928	52,641
1911.....	2,686,134	.....	.....	.....	.....
1910.....	2,533,976	.....	.....	.....	.....
1909.....	2,495,523	1,179,266	1,017,631	298,626	.....
1908.....	2,118,947	.....	.....	.....	.....
1907.....	2,547,879	.....	.....	.....	.....
1904.....	1,921,768	968,976	756,022	196,770	.....
1899.....	1,179,525	586,374	416,037	177,114	.....

NOTE: Short Ton = 2,000 lbs.
⁽¹⁾ Includes screenings, mechanical, 12,220 tons; chemical, not shown by process, 35,699 tons.
⁽²⁾ Includes screenings, mechanical, 11,769 tons; chemical, not shown by process, 35,824 tons.

TABLE 11.—Imports of pulpwood, calendar years, 1910 to 1920.

Year	Aggregate			Rough			Peeled			Rosed		
	Quantity (Cords)	Value		Quantity (Cords)	Per cent of aggregate quantity	(1) Average value per cord	Quantity (Cords)	Per cent of aggregate quantity	(1) Average value per cord	Quantity (Cords)	Per cent of aggregate quantity	(1) Average value per cord
		(1) Total	Average (1) per cord									
Total (11 years)	11,553,342	\$94,569,418	\$8.19	2,388,675	20.7		7,090,378	61.4		2,074,289	17.9	
1920	1,241,444	16,902,939	13.62	260,914	21.0	\$12.42	824,326	66.4	\$13.13	156,204	12.6	\$18.19
1919	1,047,299	10,458,753	9.99	241,420	23.1	9.59	698,785	66.7	9.70	107,094	10.2	12.75
1918	1,370,027	13,362,566	9.75	276,644	20.2	9.11	964,804	70.4	9.63	128,579	9.4	12.04
1917	1,031,934	8,563,458	8.30	206,081	20.0	7.29	673,235	65.2	8.07	152,618	14.8	10.73
1916	1,097,577	7,202,570	6.56	190,921	17.4	5.93	742,337	67.6	6.43	164,319	15.0	7.90
1915	975,974	6,278,948	6.43	258,620	26.5	5.82	544,139	55.8	6.28	173,215	17.7	7.83
1914	999,649	6,773,198	6.78	198,414	19.8	6.04	599,299	60.0	6.40	201,936	20.2	8.61
1913	1,034,885	7,007,350	6.77	195,906	18.9	5.66	581,756	56.2	6.47	257,223	24.9	8.30
1912	933,565	6,227,346	6.67	139,002	14.9	6.03	528,900	56.7	6.06	265,663	28.4	8.23
1911	889,257	5,682,716	6.39	191,062	21.5	5.44	478,116	53.2	5.98	225,079	25.3	8.06
1910	931,731	6,109,574	6.56	229,691	24.7	5.83	459,681	49.3	6.28	242,359	26.0	7.77

(1) The value of merchandise imported is the actual market value or wholesale price thereof at the time of exportation to the United States in the principal markets of the country from whence exported.

TABLE 12.—Imports of wood pulp, calendar years, 1909 to 1920.

Year	Aggregate			Mechanically ground		Chemical—unbleached						Chemical—bleached					
						Unclassified		Sulphite		Sulphate		Unclassified		Sulphite		Sulphate	
	Quantity (Short tons)	Average value per ton	Total Value	Quantity (Short tons)	Value												
Total (12 yrs.)	7,244,527	\$45.98	\$333,071,592	2,537,328	\$58,031,990	1,941,128	\$63,590,773	1,258,900	\$102,576,811	616,208	\$47,224,903	610,740	\$27,708,513	247,805	\$30,792,118	32,418	\$3,146,484
1920.....	906,297	98.66	89,418,185	233,148	13,881,596	.....	.....	344,969	37,510,435	182,697	17,025,709	.....	.....	128,206	19,046,439	17,277	1,954,006
1919.....	636,017	58.25	37,048,381	202,253	5,117,316	.....	.....	239,952	17,978,170	145,911	9,084,537	.....	.....	42,755	4,472,598	5,145	894,765
1918.....	578,209	54.44	31,477,175	185,478	4,720,036	.....	.....	253,454	16,973,540	118,761	7,971,067	.....	.....	16,757	1,512,742	3,759	299,790
1917.....	677,841	61.93	41,979,330	279,073	7,991,368	.....	.....	248,173	19,291,410	107,933	9,993,170	.....	.....	41,037	4,508,368	1,625	195,014
1916.....	683,764	39.47	26,985,693	262,517	4,696,801	(1)135,044	(1)5,255,297	(2)172,352	(2)10,822,256	(2)60,906	(2)3,150,420	(1)29,284	(1)1,506,034	(2)19,050	(2)1,251,976	(2)4,612	302,909
1915.....	568,379	29.75	16,907,026	174,056	2,588,846	321,700	10,954,182	.....	.....	.....	.....	72,623	3,363,998	.....	.....	.....	.....
1914.....	675,565	30.21	20,411,225	217,256	3,246,933	330,270	11,180,232	.....	.....	.....	.....	128,038	5,984,060	.....	.....	.....	.....
1913.....	541,455	29.43	15,935,517	167,889	2,670,781	296,255	9,676,380	.....	.....	.....	.....	77,311	3,588,356	.....	.....	.....	.....
1912.....	540,150	27.59	14,903,218	185,804	3,051,381	277,201	8,477,766	.....	.....	.....	.....	77,146	3,374,071	.....	.....	.....	.....
1911.....	562,425	25.59	14,394,253	262,681	4,221,948	213,241	6,482,360	.....	.....	.....	.....	86,502	3,689,945	.....	.....	.....	.....
1910.....	506,775	26.24	13,296,500	224,184	3,578,316	205,745	6,374,762	.....	.....	.....	.....	76,847	3,343,422	.....	.....	.....	.....
1909.....	367,650	28.06	10,315,089	142,989	2,266,668	161,672	5,189,794	.....	.....	.....	.....	62,989	2,858,627	.....	.....	.....	.....

(1) Jan. 1. to June 30 only.
(2) July 1 to December 31.

TABLE 13.—Exports of wood pulp, calendar years, 1908 to 1920.

Year	Quantity (Short tons)	Value	
		Average per ton	Total
Total.....	278,418	\$62.94	\$17,523,261
1920.....	32,133	91.80	2,949,811
1919.....	40,057	76.10	3,048,491
1918.....	22,324	77.67	1,733,872
1917.....	39,180	88.55	3,469,547
1916.....	40,023	53.01	2,121,745
1915.....	20,294	40.41	820,134
1914.....	12,337	39.27	484,477
1913.....	19,776	37.34	738,451
1912.....	14,189	38.27	542,949
1911.....	9,494	40.73	386,711
1910.....	8,361	41.18	344,251
1909.....	8,953	41.19	368,738
1908.....	11,297	45.51	514,084

TABLE 14.—Imports of paper, calendar years, 1911 to 1920.

Year	Total value	News-print paper		All other printing paper		Wrapping paper		All other paper
		Quantity	Value	Quantity	Value	Quantity	Value	
Total (10 yrs.).	\$364,233,916	(Short tons) 4,026,367	\$236,992,169	(Short tons) 17,117	\$ 2,405,756	(Short tons) 47,370	\$ 5,912,573	\$ 118,923,418
1920.	84,686,852	729,869	68,600,950	2,170	496,132	2,471	460,289	15,129,481
1919.	53,602,174	627,734	43,674,294	79	58,119	2,401	406,570	9,463,191
1918.	42,753,780	596,270	35,023,161	91	42,633	3,971	541,866	7,146,120
1917.	41,734,084	559,113	30,929,628	206	67,931	3,331	456,752	10,279,773
1916.	28,189,998	468,230	18,527,748	630	119,802	3,552	280,952	9,261,496
1915.	24,465,694	368,409	14,138,651	1,198	161,703	11,104	626,661	9,538,679
1914.	27,604,771	315,475	12,189,792	2,876	261,616	20,540	1,156,591	13,996,772
1913.	24,359,827	219,844	8,549,062	3,379	371,328	.....	735,857	14,703,587
1912.	18,723,877	85,593	3,262,778	2,799	292,242	.....	846,500	14,322,350
1911.	18,112,859	55,830	2,096,105	3,688	534,250	.....	400,535	15,081,969

TABLE 15.—Exports of paper, calendar years, 1910 to 1920.

Year	Total value	News-print paper		All other printing paper		Wrapping paper		All other paper
		Quantity	Value	Quantity	Value	Quantity	Value	
Total (11 yrs.).	\$ 437,580,790	(Short tons) 712,074	\$ 49,810,376	(Short tons) 389,370	\$ 64,879,530	(Short tons) 202,402	\$ 29,534,705	\$293,356,170
1920.	89,075,003	45,976	5,983,611	47,845	13,765,694	30,632	6,994,381	62,331,317
1919.	86,983,063	110,268	10,091,951	76,691	16,169,055	37,458	6,664,462	54,057,595
1918.	54,170,134	96,739	7,978,296	49,610	8,710,940	29,950	4,828,856	32,652,042
1917.	46,393,655	93,866	7,586,374	47,274	8,179,868	26,243	3,987,239	26,640,174
1916.	39,576,879	76,736	4,126,617	62,073	8,069,812	41,837	4,025,388	23,355,062
1915.	22,264,371	55,161	2,707,626	22,329	2,169,057	18,496	1,667,387	15,720,291
1914.	20,113,942	60,789	2,983,344	15,130	1,568,960	7,408	522,951	15 038,687
1913.	21,174,217	43,301	2,105,984	14,059	1,617,285	6,861	560,535	16,890,413
1912.	21,166,566	55,568	2,690,225	13,452	1,440,992 (1)	3,517 (1)	283,506	16,751,843
1911.	18,702,151	48,921	2,357,455	13,215	1,278,796	.....	.....	15,065,900
1910.	17,960,809 (1)	24,749 (1)	1,198,893	27,693	1,909,061	.....	.....	14,852,855

(1) Figures for period July 1 to December 31.

APPENDIX

The following tables are included for the convenience of the trade and the public, showing in condensed form the salient features of Canadian pulpwood and wood pulp statistics.

TABLE A—Pulpwood consumption, by years, species, and provinces.

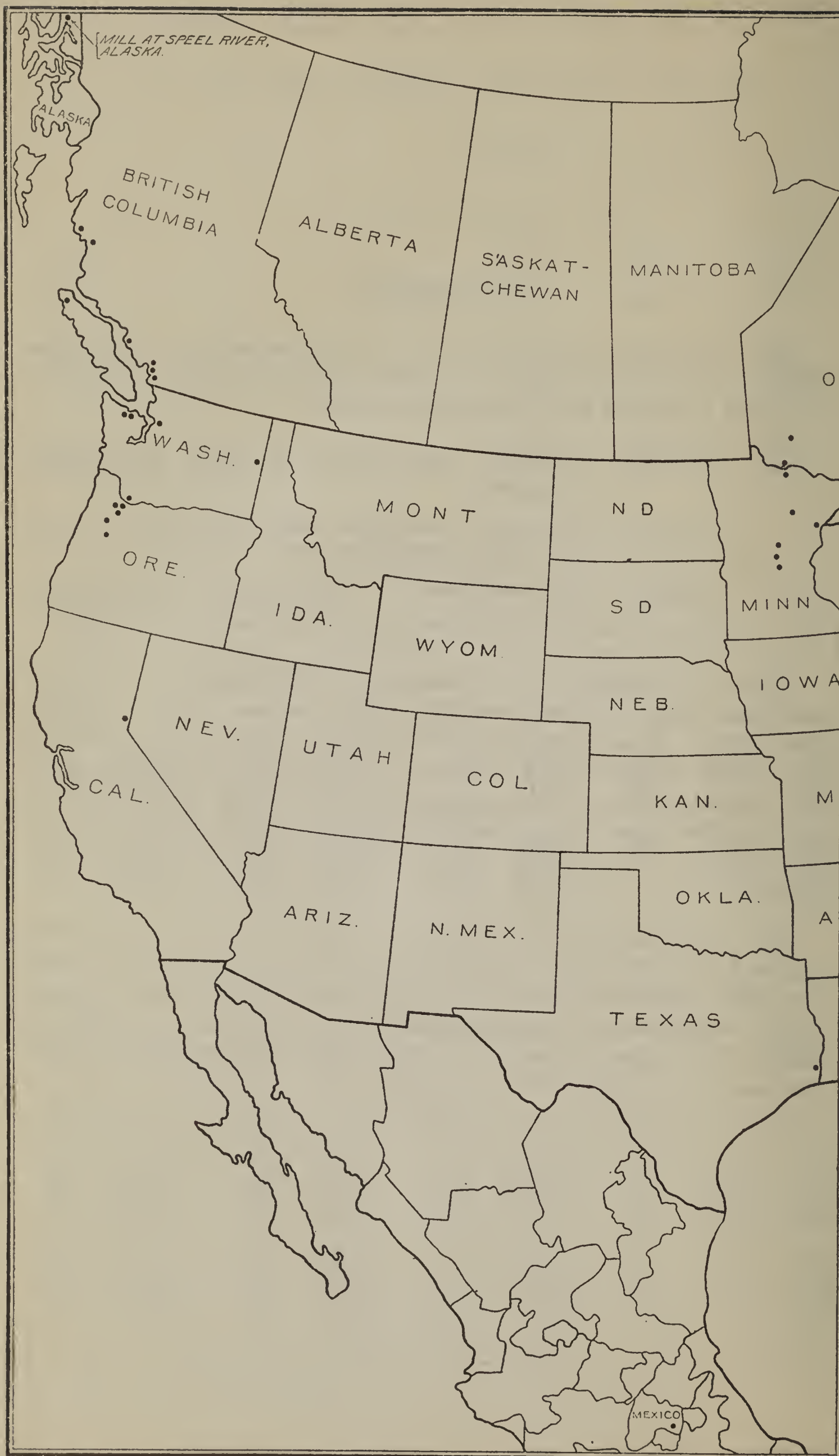
TABLE B—Pulpwood production, consumption and exports, by years and provinces.

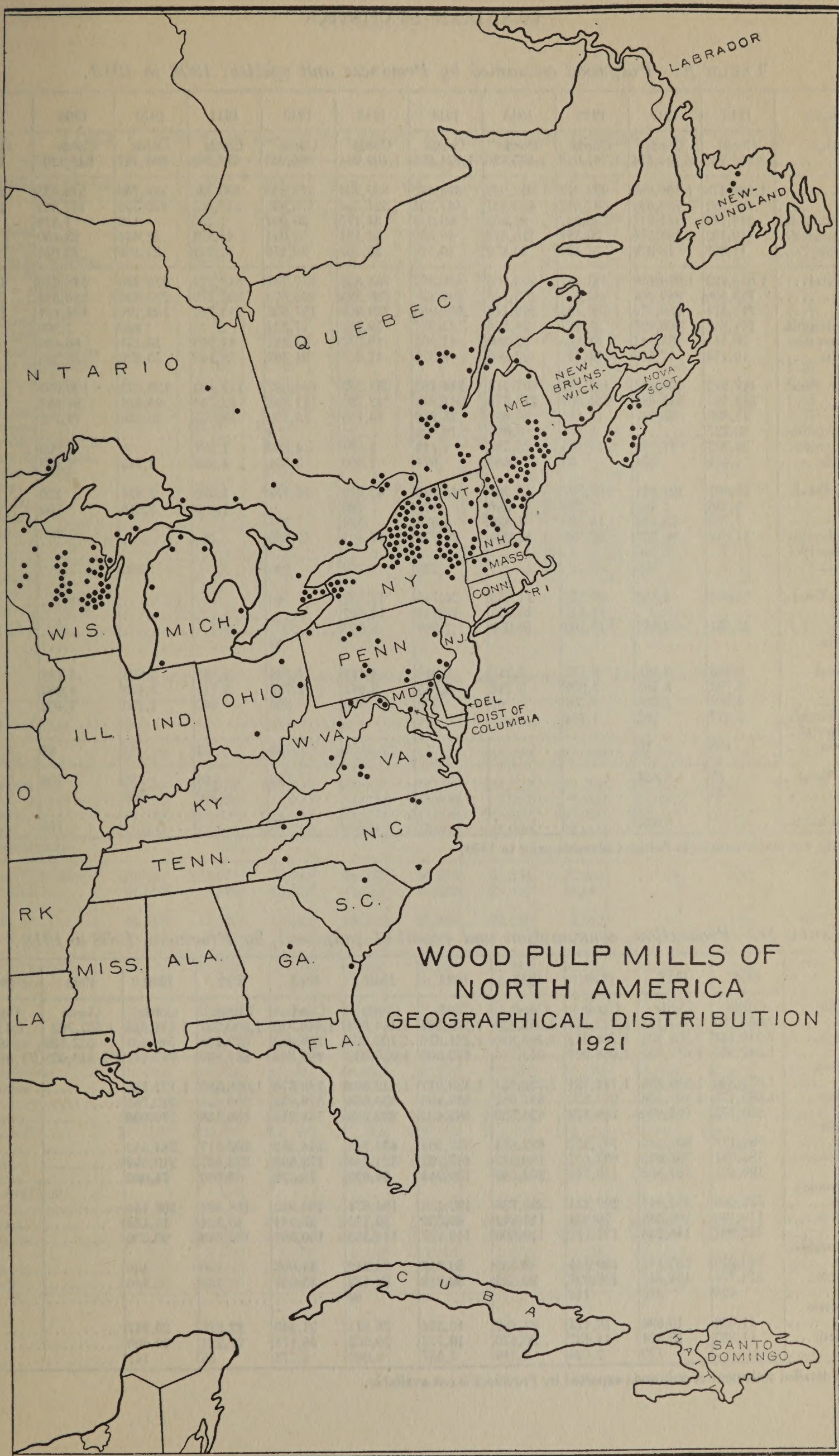
TABLE C—Pulpwood cost, by years, species, and provinces.

TABLE D—Wood pulp production, by years and processes.

These tables include all the available statistical figures of the Canadian Government bulletins from 1908 to 1918, inclusive, which are within their scope. In a few instances derived figures have been introduced where such action seemed warranted in the interest of completeness. The tabulations have been rearranged for the purpose of condensation into smaller space. They were compiled by Mr. Ansel D. Talbert, Forest Service, as were also the diagrams illustrating the body of this report.

The nomenclature of the industry in the United States has been adopted throughout the appendix to render the headings of the Canadian tables comparable with those of the United States. The Canadian tables, the frontispiece curves, and the map, supplementing the United States tables, give a broad view of the wood pulp industry in North America.





WOOD PULP MILLS OF
NORTH AMERICA
GEOGRAPHICAL DISTRIBUTION
1921

TABLE A.—Pulpwood consumed by Provinces and species, 1908 to 1918.

Provinces and species	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908
	Cords	Cords	Cords	Cords	Cords	Cords	Cords	Cords	Cords	Cords	Cords
Canada.....	2,210,744	2,104,334	1,764,912	1,405,836	1,224,376	1,109,034	866,042	672,288	598,487	622,129	482,777
Quebec.....	1,085,478	1,109,869	924,272	697,962	636,496	629,934	578,855	390,426	342,755	319,935	255,943
Ontario.....	784,691	735,691	637,612	480,627	447,751	321,244	173,903	213,667	210,552	187,352	154,714
British Columbia..	218,774	134,814	108,997	90,535	80,013	84,173	35,067	150	440	1,316	(1)
New Brunswick..	110,133	105,586	79,594	115,842	49,339	53,121	52,041	45,824	22,634	88,450	54,058
Nova Scotia.....	11,668	18,374	14,437	20,870	10,777	20,562	26,176	22,221	22,106	25,076	18,062
Spruce, Total...	1,638,733	1,678,656	1,203,557	998,156	836,387	754,858	677,747	548,276	470,230	516,030	420,631
Quebec.....	733,606	849,004	564,083	455,165	404,290	389,523	433,670	292,270	239,824	230,584	220,689
Ontario.....	711,574	659,276	528,165	396,115	358,988	259,999	157,685	193,720	189,196	174,461	129,998
British Columbia..	104,258	66,925	33,433	34,526	21,637	39,742	17,224	.....	440	1,200	.....
New Brunswick..	79,141	85,941	63,489	92,060	41,895	48,037	47,381	44,140	15,134	86,450	53,132
Nova Scotia.....	10,154	17,510	14,387	20,290	9,577	17,557	21,787	18,146	25,636	23,335	16,812
Balsam fir, Total..	447,243	309,515	433,154	307,219	314,183	283,292	164,587	117,400	120,475	100,095	57,821
Quebec.....	342,807	255,695	331,307	213,376	211,943	222,738	141,395	92,756	96,474	84,651	31,504
Ontario.....	41,803	35,927	77,121	66,631	75,218	54,165	15,130	18,957	20,256	11,791	24,416
British Columbia..	30,227	.....	8,571	3,000	18,604	.....	8	.....	.....	.....	.....
New Brunswick..	30,992	17,539	16,105	23,782	7,444	5,084	4,660	1,684	.....	2,000	676
Nova Scotia.....	1,414	354	50	430	974	1,305	3,394	4,003	3,745	1,653	1,225
Hemlock, Total..	89,007	101,321	82,307	55,265	45,246	47,360	19,178	1,670	3,816	700	.....
Quebec.....	5,336	1,581	1,258	286	172	705	.....	1,520	3,616	700	.....
Ontario.....	1,759	36,432	15,520	1,820	5,076	524	528	.....	.....	.....	.....
British Columbia..	81,912	60,702	65,529	53,009	39,772	44,431	17,750	15	.....	.....	.....
New Brunswick..	.....	2,106	.....	.....	.....	.....	.....	.....	.....	.....	.....
Nova Scotia.....	.....	500	.....	.....	226	1,700	900	.....	200	.....	.....
Jack pine, Total..	25,851	2,850	39,717	41,953	24,715	19,383	40	.....	.....	.....	2,750
Quebec.....	.....	.....	24,615	25,953	16,746	13,327	.....	.....	.....	.....	2,750
Ontario.....	25,851	2,850	15,102	16,000	7,969	6,056	.....	.....	.....	.....	.....
Nova Scotia.....	.....	.....	.....	.....	.....	.....	40	.....	.....	.....	.....
Poplar, Total....	9,885	5,168	6,177	3,243	3,845	4,141	4,405	4,186	3,608	5,188	1,575
Quebec.....	3,704	3,589	3,009	3,182	3,345	3,641	3,790	3,124	2,483	4,000	1,000
Ontario.....	3,704	1,206	1,704	61	500	500	560	990	1,100	1,100	300
British Columbia..	2,377	363	1,464	.....	.....	.....	.....	.....	.....	.....	.....
New Brunswick..	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	250
Nova Scotia.....	100	10	.....	.....	.....	.....	55	72	25	88	25
All other, Total..	25	6,824	.....	.....	.....	.....	85	756	358	116	.....
Quebec.....	25	.....	.....	.....	.....	.....	.....	756	358	.....	.....
Ontario.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British Columbia..	.....	6,824	.....	.....	.....	.....	85	.....	.....	116	.....

(1) No pulp was manufactured in British Columbia prior to 1909.

TABLE B.—Production, consumption and export of pulpwood, by Provinces, 1908 to 1918.

	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908
	Cords	Cords	Cords	Cords	Cords	Cords	Cords	Cords	Cords	Cords	Cords
Canada											
Production.....	3,560,280	3,122,188	2,833,119	2,355,550	2,196,884	2,144,064	1,846,910	1,520,227	1,541,628	1,537,762	1,378,186
Consumption.....	2,210,744	2,104,334	1,764,912	1,405,836	1,224,376	1,109,034	866,042	672,288	598,487	622,129	482,777
Export.....	1,349,536	1,017,854	1,068,207	949,714	972,508	1,035,030	980,868	847,939	943,141	(1) 915,633	(1) 895,409
Quebec											
Production.....	1,971,250	1,808,708	1,711,151	1,322,231	1,323,917	1,432,594	1,330,670	1,026,562	1,121,755	.....	.....
Consumption.....	1,085,478	1,109,869	924,272	697,962	636,496	629,934	578,855	390,426	342,755	.....	.....
Export.....	885,772	698,839	786,879	624,269	687,421	802,260	751,815	636,136	779,000	.....	.....
Ontario											
Production.....	984,112	897,343	787,357	682,866	587,494	405,943	246,282	302,717	284,552	.....	.....
Consumption.....	784,691	735,691	637,612	480,627	447,751	321,244	173,903	213,667	210,552	.....	.....
Export.....	199,421	161,652	149,745	202,239	139,743	84,699	72,379	89,050	74,000	.....	.....
New Brunswick											
Production.....	374,040	261,841	207,324	235,738	193,126	194,674	202,942	168,522	105,134	.....	.....
Consumption.....	110,133	105,586	79,594	115,842	49,339	53,121	52,041	45,824	15,134	.....	.....
Export.....	263,907	156,255	127,730	119,896	143,787	141,553	150,901	122,698	90,000	.....	.....
British Columbia											
Production.....	219,210	135,143	109,115	90,535	80,013	84,242	35,067	150	440	.....	.....
Consumption.....	218,774	134,814	108,997	90,535	80,013	84,173	35,067	150	440	.....	.....
Export.....	436	329	118	.....	.....	69	.....	.....	.....	.....	.....
Nova Scotia											
Production.....	11,668	19,094	18,172	24,180	12,334	26,611	31,949	22,276	29,747	.....	.....
Consumption.....	11,668	18,324	14,437	20,870	10,777	20,562	26,176	22,221	29,606	.....	.....
Export.....	.....	770	3,735	3,310	1,557	6,049	5,773	55	141	.....	.....

(1) The detailed statement of pulpwood exported by Provinces is not available.

TABLE C.—Average cost of pulpwood, by species and Provinces, 1908 to 1918.

Species and Provinces	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908
Spruce.....	\$10.45	\$8.76	\$7.66	\$7.07	\$6.70	\$6.76	\$6.09	\$6.47	\$6.05	\$5.41	\$6.04
Quebec.....	10.28	8.29	7.53	6.40	6.64	6.73	5.90	6.51	5.47	5.61	5.77
Ontario.....	13.36	9.78	7.97	8.13	6.98	7.20	7.08	6.75	7.01	5.69	7.18
British Columbia.....	10.57	7.42	5.98	6.57	5.37	5.40	5.51	....	5.00	8.00	....
New Brunswick.....	8.47	6.97	7.68	6.50	6.09	6.51	5.53	5.53	5.79	4.66	4.92
Nova Scotia.....	6.36	7.32	5.27	4.77	4.40	4.69	4.29	5.01	4.68	4.07	4.39
Balsam Fir.....	11.52	9.82	7.31	5.84	6.58	6.38	5.81	6.40	5.71	6.26	6.40
Quebec.....	10.01	9.68	7.33	5.30	6.31	6.17	5.69	6.28	5.57	6.46	5.62
Ontario.....	13.45	12.35	7.68	7.73	7.80	7.34	7.40	7.46	7.22	6.07	7.53
British Columbia.....	11.61	....	5.02	4.66	5.25	....	5.25	....	....	....	....
New Brunswick.....	7.09	6.80	6.47	5.64	5.59	5.80	5.39	4.50	....	6.00	5.15
Nova Scotia.....	6.00	4.46	5.50	3.81	3.27	4.30	4.36	4.98	3.94	4.08	4.62
Hemlock.....	11.67	9.38	5.88	5.89	5.63	4.25	5.53	5.18	4.43	4.51	....
Quebec.....	8.23	6.66	5.25	4.00	4.00	5.50	....	4.93	4.40	4.51	....
Ontario.....	20.00	13.64	9.50	7.41	8.00	8.00	7.00	....	....	....	....
British Columbia.....	11.82	6.99	5.03	5.85	5.35	4.20	5.51	7.60	....	....	....
New Brunswick.....	....	7.30	....	....	....	....	....	....	....	....	....
Nova Scotia.....	....	6.00	....	....	3.00	4.00	5.00	....	5.00	....	....
Jack Pine.....	9.84	9.00	4.84	5.37	5.49	5.25	4.00	....	....	....	4.00
Quebec.....	....	....	5.67	6.52	6.20	6.04	....	....	....	....	4.00
Ontario.....	9.84	9.00	3.50	3.50	4.00	3.50	....	....	....	....	....
Nova Scotia.....	....	....	....	....	....	....	4.00	....	....	....	....
Poplar.....	11.22	8.45	6.75	6.94	6.81	7.02	6.20	6.17	5.92	5.81	5.82
Quebec.....	10.95	8.00	6.76	6.85	6.63	7.03	6.27	6.07	5.80	5.75	6.00
Ontario.....	12.21	10.93	8.21	11.42	8.00	7.00	6.00	6.73	6.25	6.25	7.00
British Columbia.....	9.22	4.69	5.03	....	....	....	....	....	....	....	....
New Brunswick.....	....	....	....	....	....	....	....	....	....	....	4.00
Nova Scotia.....	7.00	6.00	....	....	....	....	4.09	3.00	3.00	2.84	2.48

TABLE D.—Wood pulp production, by processes, 1908 to 1918.

Kind of pulp	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908
Canada.....	1,557,193	1,464,308	1,296,084	1,074,805	934,700	854,624	682,632	496,833	474,604	445,408	363,079
Mechanical.....	879,510	923,731	827,258	743,776	644,924	600,216	499,226	362,321	370,195	325,609	278,570
Soda.....	3,761	4,136	3,877	3,150	1,893	2,572	6,959	24,121	8,422	4,873	2,178
Sulphite.....	494,322	374,894	363,972	235,474	217,550	183,552	142,978	110,391	95,987	114,926	82,331
Sulphate.....	179,600	161,393	100,977	92,405	70,333	68,284	33,469	....	....	....	....
Other wood pulp....	....	154	....	....	....	....	....	....	....	....	....
British Columbia..	173,161	111,875	78,655	65,823	56,352	61,354	25,254	90	350	644	....
Mechanical.....	91,588	65,620	48,313	41,111	32,692	38,535	15,441	....	....	....	....
Soda.....	....	....	....	....	....	....	....	....	....	44	....
Sulphite.....	66,329	43,392	30,342	24,712	23,660	22,819	9,813	90	350	600	....
Sulphate.....	15,244	2,863	....	....	....	....	....	....	....	....	....
New Brunswick..	66,619	58,340	43,374	62,093	26,829	29,911	29,525	24,163	9,285	49,991	36,711
Mechanical.....	6,463	7,245	7,154	8,344	4,319	6,702	7,010	4,515	....	18,751	21,096
Soda.....	....	....	....	....	....	....	4,000	2,000	1,600	2,000	....
Sulphite.....	30,766	43,009	36,220	53,749	21,510	20,209	18,515	17,648	7,685	29,240	15,615
Sulphate.....	29,390	8,086	....	....	1,000	3,000	....	....	....	....	....
Other wood pulp....	....	....	....	....	....	....	....	....	....	....	....
Nova Scotia.....	10,017	20,355	14,437	20,870	10,777	20,562	26,176	19,099	25,955	23,996	16,794
Mechanical.....	10,017	20,355	14,437	20,870	10,777	20,562	26,176	19,099	25,955	23,996	16,794
Ontario.....	505,366	489,488	473,014	364,226	325,233	228,498	142,257	140,959	156,076	132,491	108,124
Mechanical.....	277,922	310,620	308,416	247,825	202,715	135,753	110,612	89,652	108,351	84,286	74,450
Soda.....	730	560	....	....	....	....	....	420	454	440	2,178
Sulphite.....	216,255	165,173	154,530	106,401	115,877	87,699	31,645	50,887	47,271	47,765	31,496
Sulphate.....	10,459	12,981	10,068	10,000	6,641	5,046	....	....	....	....	....
Other wood pulp....	....	154	....	....	....	....	....	....	....	....	....
Quebec.....	802,030	784,250	686,604	561,793	515,409	514,299	459,420	312,522	282,938	238,286	201,450
Mechanical.....	493,520	519,891	448,938	425,626	394,321	398,664	339,987	249,055	235,889	198,576	166,230
Soda.....	3,031	3,576	3,877	3,150	1,893	2,572	2,959	21,701	6,368	2,389	....
Sulphite.....	180,972	148,859	142,880	50,612	56,503	52,825	83,005	41,766	40,681	37,321	35,220
Sulphate.....	124,507	111,924	90,909	82,405	62,692	60,238	33,469	....	....	....	....

